

Claims

[c1] WHAT IS CLAIMED IS:

1. A method for honing a bore having a first section and a second section sequentially arranged in an axial direction of the bore and possibly not concentric to one another, wherein the first section is hardened so that the first and second sections have different hardness; the method comprising the steps of:

radially supporting a honing tool by positioning guides of the honing tool on the second section of the bore; machining the first section with honing stones arranged on the honing tool to remove material from the first section;

during machining of the first section, expanding the honing tool by feeding the honing stones according to a defined feeding mode against a surface of the first section by a force-guided electro-mechanical advancement; during machining of the first section, adjusting a working stroke of the honing tool continuously at least toward the end of the step of machining;

wherein feeding of the guides is realized independently of feeding of the honing stones.

- [c2] 2. The method according to claim 1, wherein in the step of adjusting the working stroke of the honing tool the working stroke is moved in a direction toward the second section.
- [c3] 3. The method according to claim 1, wherein in the step of adjusting the working stroke of the honing tool the working stroke is moved in a direction toward an open end of the first section.
- [c4] 4. The method according to claim 1, wherein in the step of adjusting the working stroke of the honing tool the working stroke is moved in a direction toward the second section and in a direction toward the open end of the first section.
- [c5] 5. The method according to claim 1, further comprising the step of producing a counterbore at an open end of the first section.
- [c6] 6. The method according to claim 1, wherein the step of machining of the first section includes the step of driving the honing tool alternately in different rotary directions.
- [c7] 7. The method according to claim 6, wherein a change of the rotary direction of the honing tool is carried out after a machining cycle, respectively.

- [c8] 8. The method according to claim 6, wherein a change of rotary direction of the honing tool is realized once during a machining cycle.
- [c9] 9. The method according to claim 8, wherein the change of rotary direction is carried out upon reaching half a thickness of a material layer to be removed during machining.
- [c10] 10. The method according to claim 6, wherein change of rotary direction is carried out at least twice during a machining cycle.
- [c11] 11. The method according to claim 1, wherein during machining an advancing force of the honing stones is measured continuously and maintained within a predetermined range defined by an upper and a lower limit, and wherein according to the defined feeding mode the honing stones are expanded in steps when the lower limit of the advancing force is reached, respectively.
- [c12] 12. The method according to claim 1, wherein the bore is a cylinder bore in a crankcase of an internal combustion engine.